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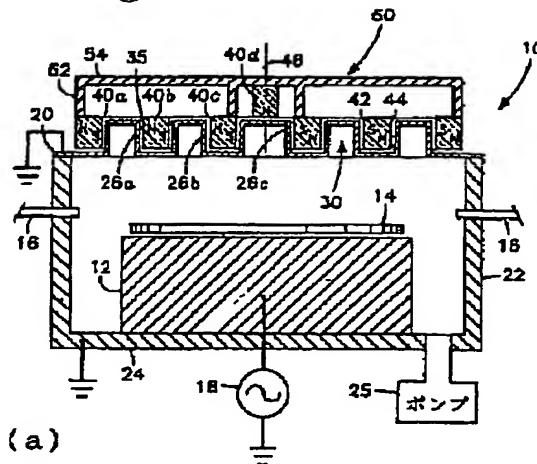
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APPLICANT : APPLIED MATERIALS INC;

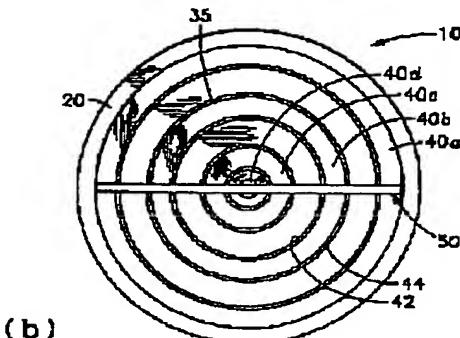
INVENTOR : MICHAEL WELCH;

INT.CL. : H01L 21/3065 C23F 4/00 H05H 1/46

TITLE : SHALLOW MAGNETIC FIELD FOR
 IMPROVING PLASMA PROCESSING
 BY THE CIRCULATION OF
 ELECTRONS



(a)



(b)

ABSTRACT : PROBLEM TO BE SOLVED: To equalize the magnetic field at the whole surface of a wafer at large by coupling an EF plasma electron source with a pedestal supporting a work piece under the ceiling inside a reactor chamber, and generating magnetic fields symmetrical in radial direction about the axis of symmetry of the reactor chamber, in the vicinity of the ceiling of the reactor chamber.

SOLUTION: A reactor chamber 10 is provided with a round ceiling 20 made of aluminum, silicon, or quartz, and a work piece 14 is supported with a pedestal 12, under the ceiling 20. Then, an RF plasma power source 18 is connected between the pedestal 12 and an earth, and the process gas supplied into the reactor chamber 10 from a gas inlet 16 is ionized by the RF plasma power source 18 to generate plasma. By the generation of the plasma, the magnetic fields of ring magnets 40a-40d close to the ceiling are supplied symmetrically in a radial direction about the axis of symmetry of the reactor chamber 10. Hereby, the magnetic field at the whole surface of the wafer being a work piece 14 can be equalized.

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